



Risk-based meat inspection in the context of the agriculture transformation strategy



Food and Agriculture
Organization of the
United Nations

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OUTLINE

1. Agriculture Transformation Global Initiative of FAO
2. Meat Inspection from Traditional to Risk-Based
3. Technical Guidance and Meat Safety Assurance Systems
4. Food Standards and Harmonization

TRANSFORMING FOOD AND AGRICULTURE

20 Interconnected Actions to Guide Decision-Makers

FIVE KEY PRINCIPLES

- 1** Increase productivity, employment and value addition in food systems 
- 2** Protect and enhance natural resources 
- 3** Improve livelihoods and foster inclusive economic growth 
- 4** Enhance the resilience of people, communities and ecosystems 
- 5** Adapt governance to new challenges 

- 1** Facilitate access to productive resources, finance and services ★
- 2** Connect smallholders to markets ★
- 3** Encourage diversification of production and income ★
- 4** Build producers' knowledge and develop their capacities ★

- 5** Enhance soil health and restore land
- 6** Protect water and manage scarcity ★
- 7** Mainstream biodiversity conservation and protect ecosystem functions
- 8** Reduce losses, encourage reuse and recycle, and promote sustainable consumption ★

- 9** Empower people and fight inequalities
- 10** Promote secure tenure rights for men and women
- 11** Use social protection tools to enhance productivity and income
- 12** Improve nutrition and promote balanced diets ★

- 13** Prevent and protect against shocks: enhance resilience
- 14** Prepare for and respond to shocks
- 15** Address and adapt to climate change ★
- 16** Strengthen ecosystem resilience

- 17** Enhance policy dialogue and coordination ★
- 18** Strengthen innovation systems ★
- 19** Adapt and improve investment and finance ★
- 20** Strengthen the enabling environment and reform the institutional framework ★

HAND IN HAND INITIATIVE

Evidence-based, country-led and country-owned initiative to accelerate agricultural transformation and sustainable rural development to [eradicate poverty \(SDG 1\)](#) and [end hunger and all forms of malnutrition \(SDG2\)](#).



5 PRINCIPLES



Target de Poorest



MatchMaking



FAO Mandate and SDG Targets



Provide a Framework



Partnerships

DIGITAL TRANSFORMATION OF AGRICULTURE

The latest revolution in Agriculture. Offers new opportunities through the ubiquitous availability of highly interconnected and data intensive computational technologies.



CLASSIFICATION



Mobile devices and social media



Precision agriculture and remote sensing technologies



Big Data, cloud, analytics and Cybersecurity



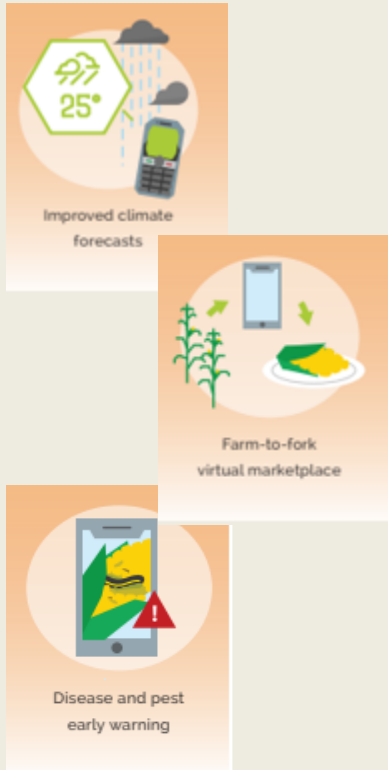
Integration and coordination (ex. blockchain)



Intelligent systems (Artificial Intelligence, robotics)

DIGITAL TRANSFORMATION OF FOOD SYSTEMS

Impacts and Opportunities



- Gathering, integrating, and analyzing data to predict, assess and manage Food Safety risks
- Availability of information with increased transparency can build trust and lead to new trade opportunities
- Platforms such as e-certification and e-commerce can improve cross-border flow of food
 - Also requires new governance approaches to ensure food safety
- Artificial Intelligence (AI) in support of Food Safety Risk Assessment.

TWO INTERNATIONAL FOOD SAFETY CONFERENCE IN 2019



The future of food safety

Transforming knowledge into action for people, economies and the environment

Safe and Sustainable Food Systems in an Era of Accelerated Climate Change

Empowering Consumers to Make Healthy Food Choices and Support Sustainable Food Systems

Science, Innovation and Digital Transformation at the service of Food Safety

The Burden of Foodborne Diseases and the Benefits of Investing in Safe Food.

ADAPTATION TO EMERGING FOOD SAFETY CHALLENGES



- *Climate change has important impact on food safety.*
 - *Need to implement effective adaptation and intervention strategies*
- *Sustainable intensification of crop production, livestock, and aquaculture.*
 - A paradigm shift in practices is required to ensure a sufficient supply of safe food at a global level while at the same time mitigating climate change and minimizing environmental impacts.
- *Emergence of alternative food and feed products as alternative to combat threats to food security*
 - *Needs to be driven by science.*

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agriculture transformation strategy**

Meat Inspection from Traditional to Risk-Based

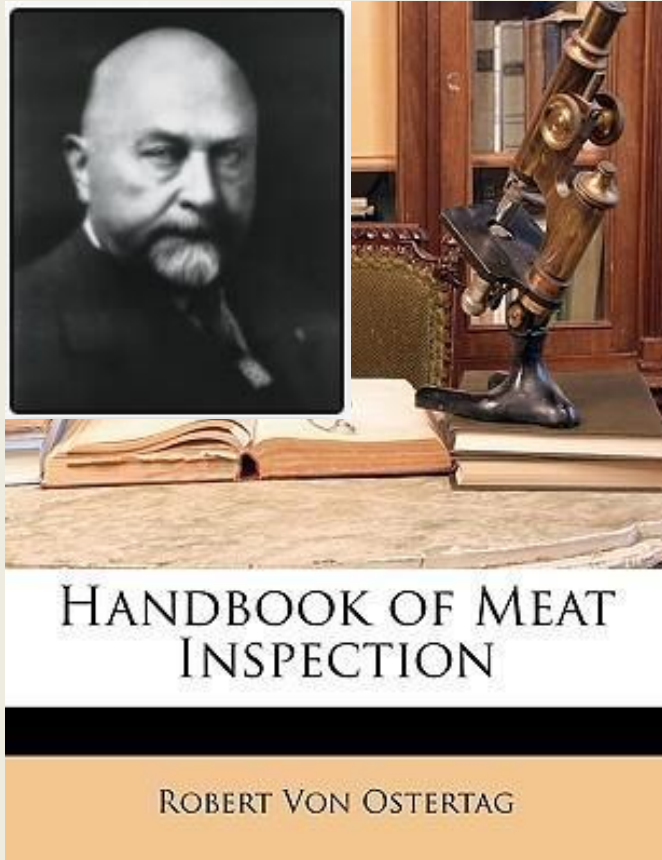
PURPOSE OF MEAT INSPECTION

The purpose of the inspection is to assess if the meat is fit for human consumption



- Analysis of food chain information
- Ante-mortem inspection
- Animal welfare
- Post-mortem inspection
- Specified risk material and other by-products
- Laboratory testing

FROM TRADITIONAL TO RISK-BASED



- 19th century – Development of the systematic meat inspection procedure in Europe
- To protect humans against the dangers which threaten them from eating meat
- Procedure was highly risk-based, considering risks relevant at that time
- The protocol has remained nearly the same despite risks have changed over decades

Key weaknesses of traditional meat inspection



- No Food Chain Information (FCI) collection
- Ante-mortem and post-mortem inspection not able to detect high-priority meat-borne hazards;
- Manual handling of meat, including use of palpation/incision techniques, during postmortem inspection may increase the spread of hazards by cross-contamination;
- Official inspections are not taking into consideration the level of risk

Change in the Nature of the Hazards associated with Meat

- Over time, practices have been focused on detecting zoonotic agents (e.g. *Mycobacterium*, *Cysticercus*, *Trichinella*)
- Today, emerging hazards without clinical symptoms or pathological lesions on the carcasses.

Biological Hazards

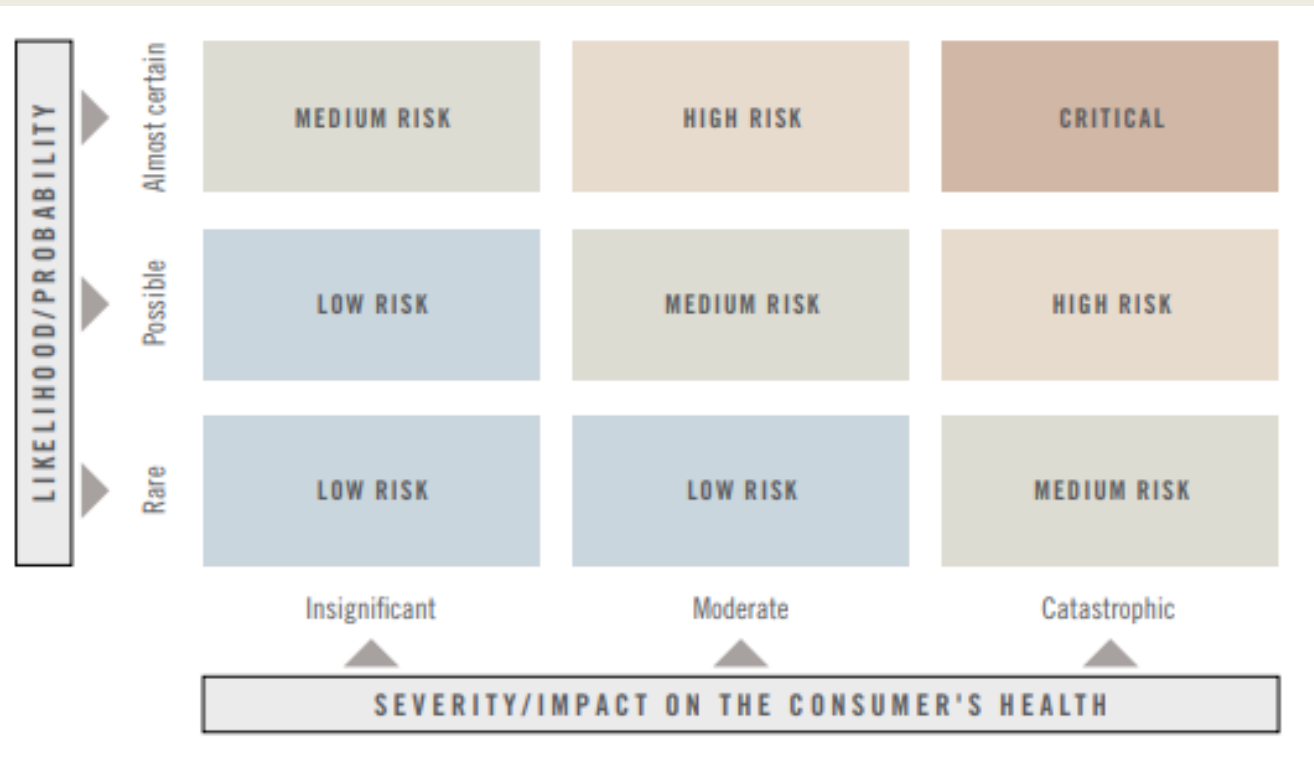
- Pathogenic *E. coli*
- *Salmonella*
- *Toxoplasma*
- *Campylobacter*

Chemical Hazards

- Dioxins
- *Chemical elements (Cadmium)*
- *Antimicrobial residues*

THE RISK-BASED APPROACH

Decisions, standards and inspection activities based on scientific knowledge of the risks

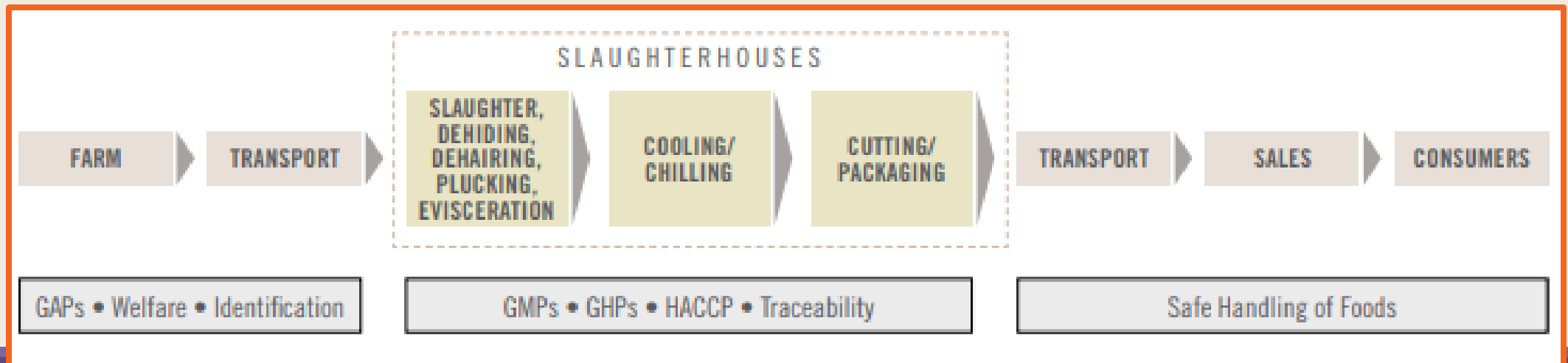


- Risk Assessment
- Risk Profiling
- Risk Ranking
- Risk Prioritization

THE RISK-BASED APPROACH

Other weaknesses of Traditional Meat Inspection

- No Food Chain Information (FCI) collection
- Cross-contamination - Manual handling of meat, including use of palpation/incision techniques, during postmortem inspection may increase the spread of hazards
- Cost issue



THE RISK-BASED APPROACH

Principles and Prerequisites

- Shared and co-operative inspection programs between Competent Authorities and Food Business Operators
- Integration of HACCP-Based principles and process controls into the slaughter procedures
- Value chain approach - importance of FCI and consumer education

- ✓ Better understanding of the risk
- ✓ Focus on preventive measures
- ✓ Better allocation of resources
- ✓ Visual only inspection
- ✓ Frequency of Inspection

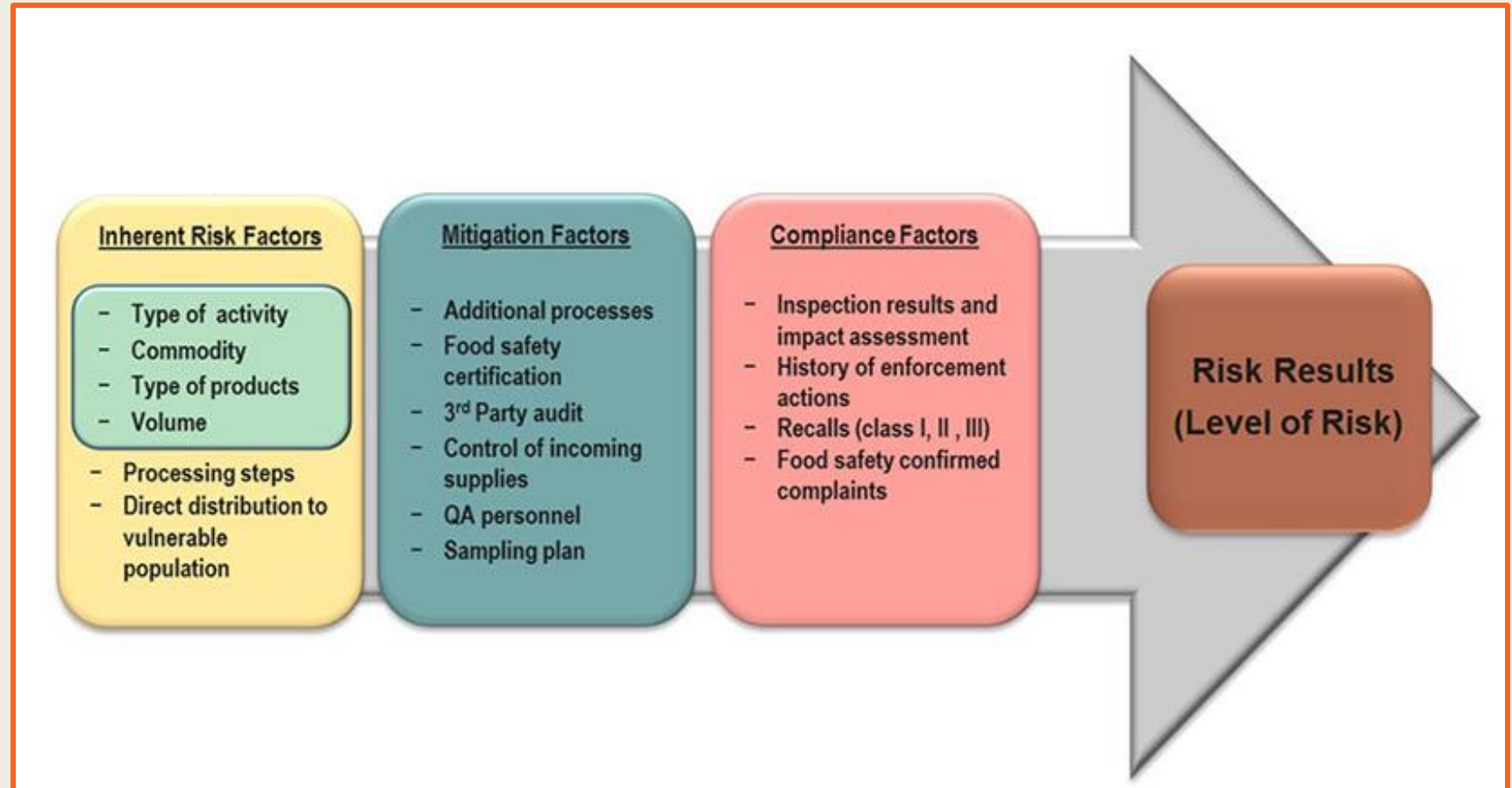
RISK-BASED INSPECTION PROGRAMS CANADA



- HACCP – Based Slaughter Inspection Program (HIP) for Swine
- High Line Speed Inspection Speed Inspection System (HLIP) for Beef
- Modernized Poultry Inspection Program (MPIP)

RISK-BASED INSPECTION PROGRAMS CANADA

Establishment – Risk Based Assessment



RISK-BASED INSPECTION PROGRAMS

EU

Meat inspection: EFSA completes review of practices and recommends improvements

2013



Species	Biological hazards	Chemical hazards
Cattle	Verocytotoxin-producing <i>Escherichia coli</i> (VTEC), <i>Salmonella</i>	Dioxins, dioxin-like polychlorinated biphenyls (DL-PCBs)
Sheep and goats	VTEC, <i>Toxoplasma</i>	Dioxins, Dioxin-like polychlorinated biphenyls (DL-PCBs)
Solipeds	<i>Trichinella</i>	Phenylbutazone*, Chemical elements (cadmium)
Farmed game (Deer)	<i>Toxoplasma</i>	None
Farmed game (Wild boar)	<i>Salmonella</i> , <i>Toxoplasma</i>	None
Farmed game (reindeer, ostriches, rabbits)	None	None

Revision of Meat Inspection Programs and Regulations

RISK-BASED INSPECTION PROGRAMS PERSPECTIVES FOR DEVELOPING COUNTRIES

EXAMPLES OF ANIMAL IDENTIFICATION SYSTEMS



Botswana. Livestock identification and traceability system (LITS) that satisfies European Union (EU) export requirements.

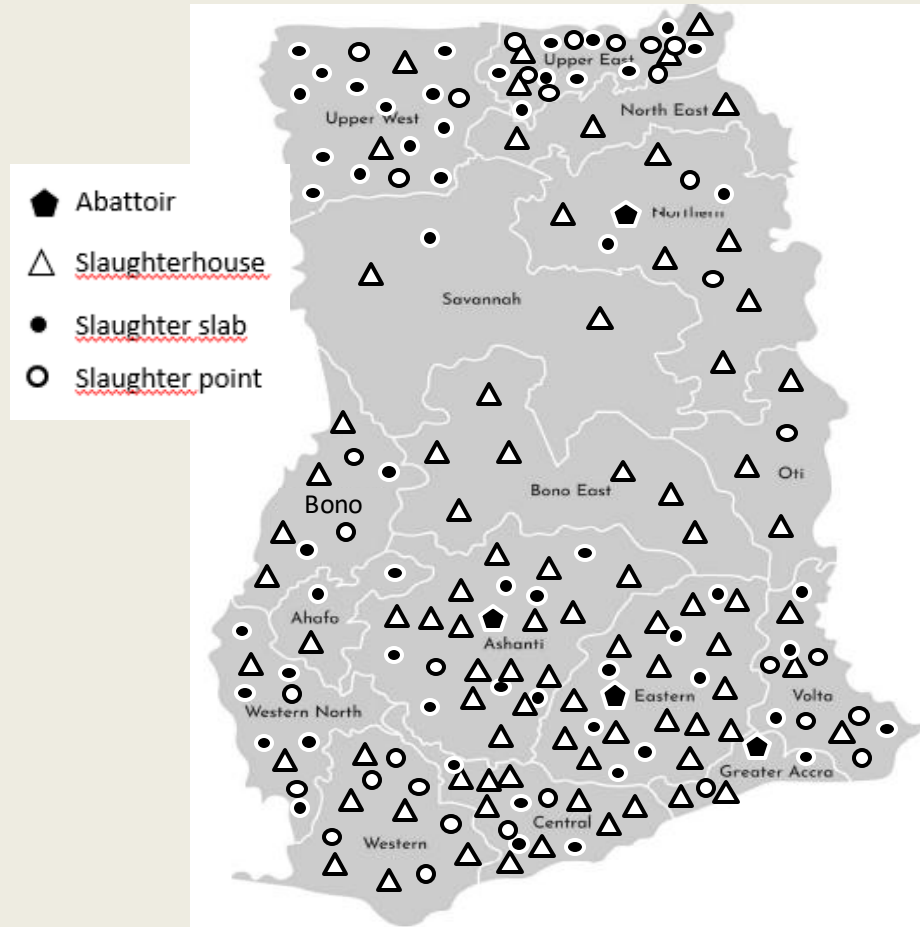
India. Integrated animal recording system, referred to as the Information Network for Animal Productivity and Health (INAPH).

Namibia. Fan Meat Scheme, which is managed by the Meat Board of Namibia. The system was developed to satisfy standards required to export meat to the EU and South Africa.

Uruguay. Animal Identification and Registration System (SIRA)

RISK-BASED INSPECTION PROGRAMS

MAPPING AND PROFILING OF SLAUGHTER ESTABLISHMENTS IN GHANA



- ❖ Facility design: inadequate in most of the cases
- ❖ Supply of potable water and electricity challenging;
- ❖ Capacity development in GHPs, GMPs, HACCP for competences authorities, abattoir staff, butchers and meat handlers;
- ❖ Absence of coordination mechanism among the institution involved in the management of meat inspection.

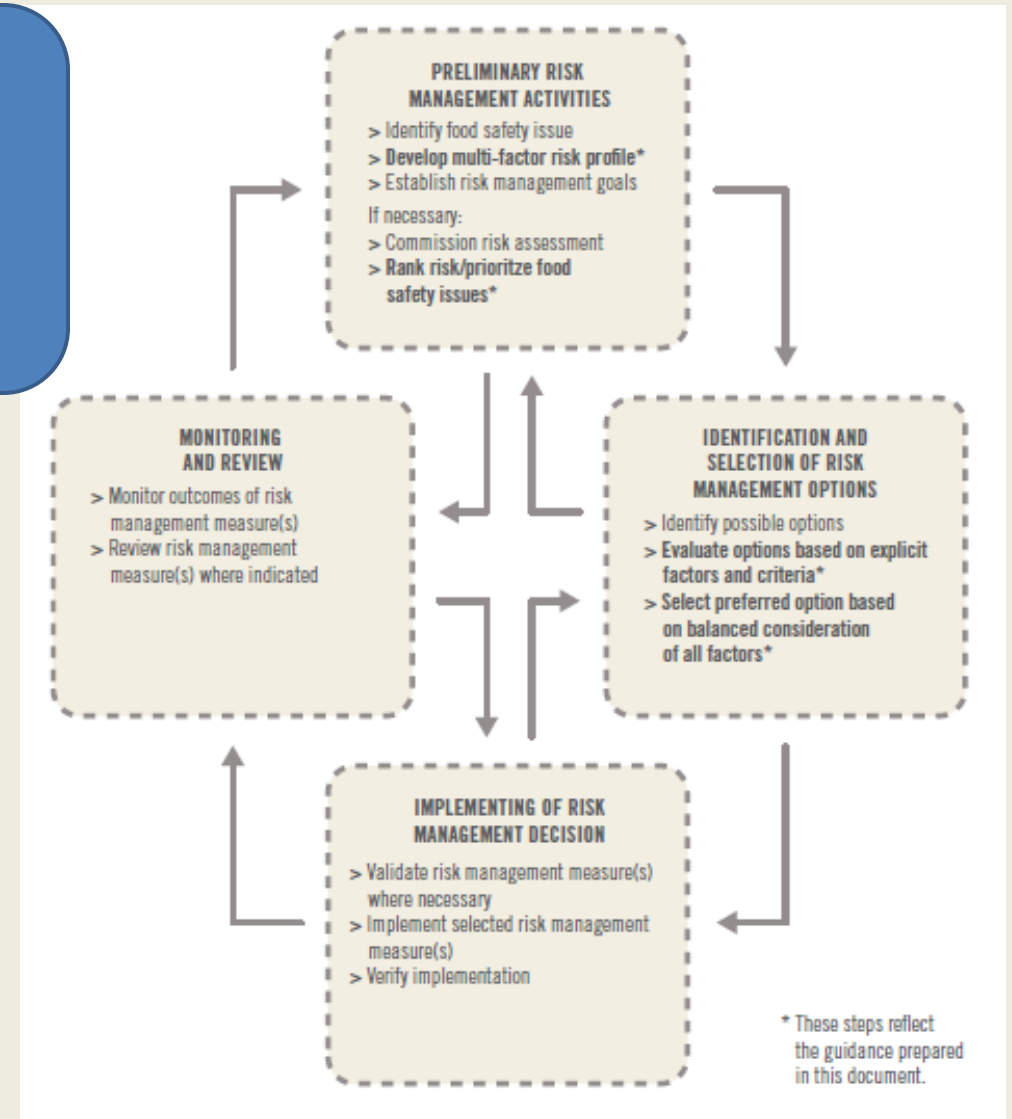
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**FAO Technical Guidance
and Meat Safety Assurance
Systems**

FOOD SAFETY RISK MANAGEMENT FRAMEWORK

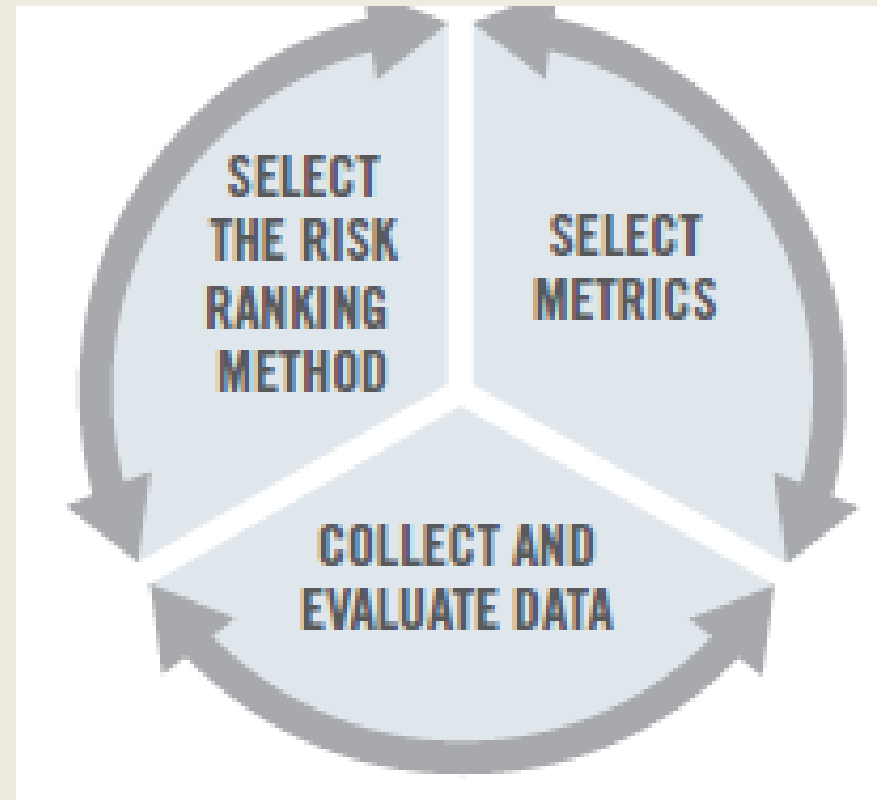
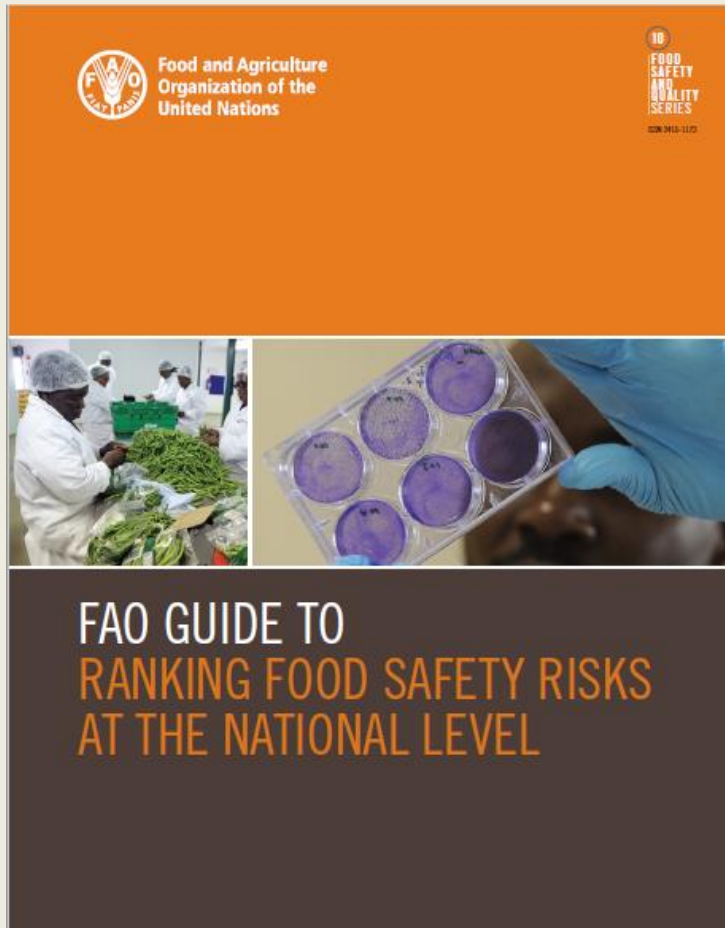


General Principles for Risk Analysis



Risk Management Framework

FOOD SAFETY RISK RANKING



FOOD CONTROL SYSTEM ASSESSMENT TOOL



Are system resources adequate?

How does the system interact with stakeholders?

Does the system facilitate continuous improvement?

How do the controls function?



SITUATION OF FOOD SAFETY SITUATION AFRICA

A - Policy and Regulatory Framework

- Outdated and insufficient food safety legislations
- Lack of enforcement
- Absence of coordination

C – Interaction with stakeholders

- Importance of informal markets
- Street food
- Capacity to participate in activities internal standard setting bodies (Codex)

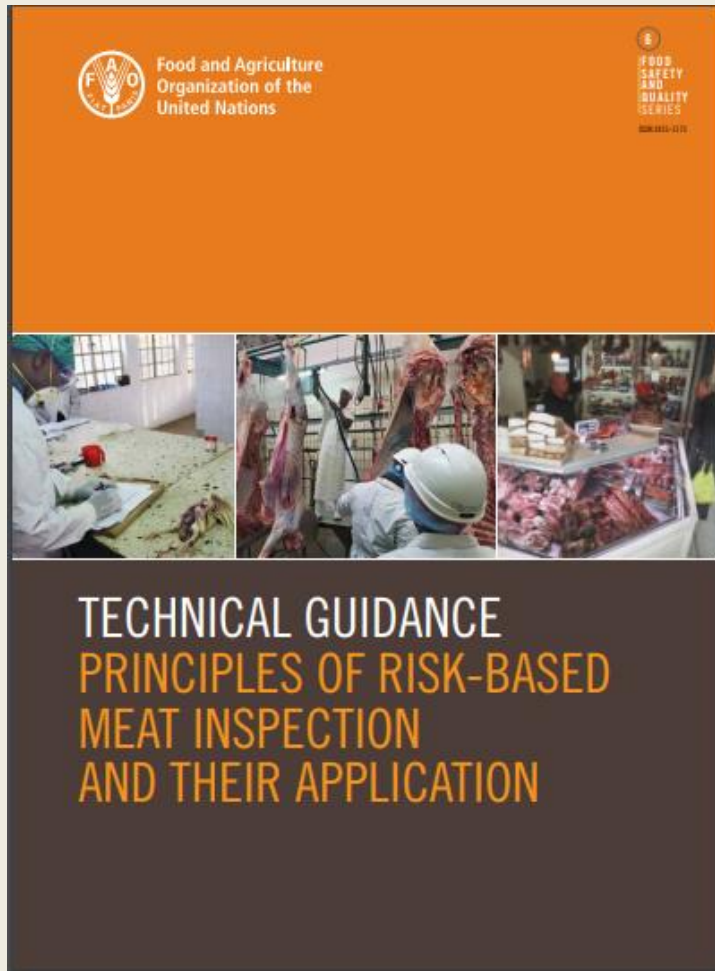
B – Food Safety Control Function

- Insufficient capacity to maintain routine control activities
- Insufficient Laboratory Capacity

D – Scientific capacity

- Low capacity for Food Safety risk analysis
- Risk-based approach

SITUATION OF FOOD SAFETY SITUATION - AFRICA



CONCEPTS AND APPROACHES OF MEAT INSPECTION

SLAUGHTERING AND INSPECTION PROCEDURES

GENERAL PRINCIPLES FOR GHP AND HACCP IN MEAT PROCESSING ESTABLISHMENTS

MEAT INSPECTION LEGISLATION

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Food Standards and Harmonization

INTERNATIONAL STANDARD SETTING BODIES (ISSBs)

FOOD SAFETY



CODEX ALIMENTARIUS
INTERNATIONAL FOOD STANDARDS

ANIMAL
HEALTH



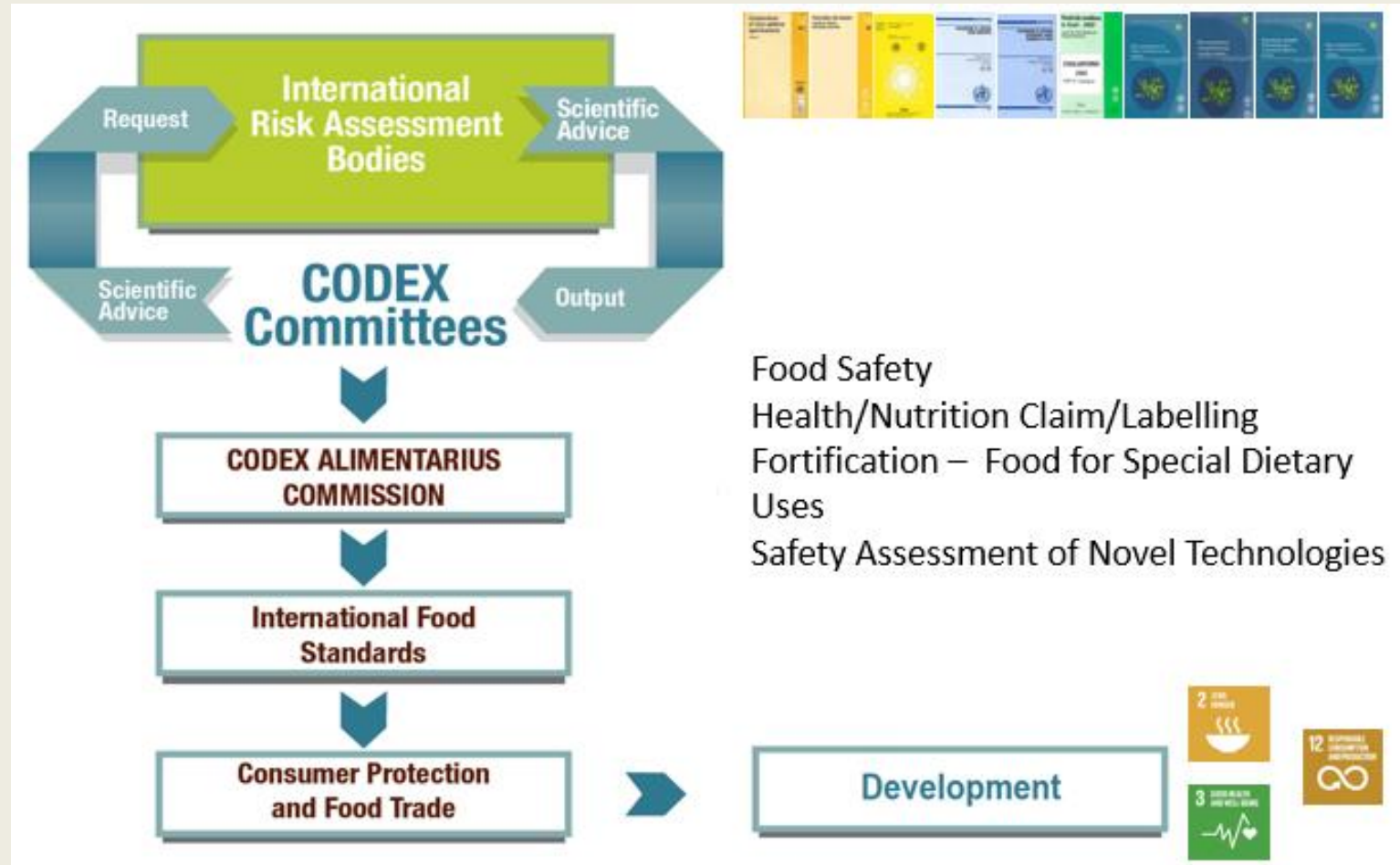
Oie **WORLD ORGANISATION FOR ANIMAL HEALTH**
Protecting animals, preserving our future

PLANT
HEALTH



**International Plant
Protection Convention**

SCIENTIFIC BASIS OF CODEX ALIMENTARIUS



FOOD SAFETY IN THE CONTEXT OF AFRICA CONTINENTAL FREE TRADE AREA (AfCFTA)



- AfCFTA will bring together 55 member states of the AU covering a market of 1.2 billion people
- To create a single continental market for goods and services
- Establishment of Africa Food Safety Agency (AFSA)

FOOD SAFETY IN THE CONTEXT OF AFRICA CONTINENTAL FREE TRADE AREA (AfCFTA)



- Strengthening the capacity of member states to participate in the activities of International Standards Setting Bodies (ISSB)
 - Codex alimentarius
 - SPS measures
- Developpement of new food standards
- Promoting harmonization of food safety control measures at sub-regional and regional levels

THANK YOU !

MERCI !